

ABB PROCESSMASTER WATER

FEW620

Electromagnetic Flowmeter

Condensed product and selection datasheet



DN25-DN3000

$\pm 0.4\%$ standard

IP66/67 | IP68

HART 7.9 | MODBUS

Manufacturer: ABB | Product family: ProcessMaster Water

Technical content condensed from ABB DS/FEW620_FER620 EN Rev. C (March 2026).

Final specifications depend on size, flange, material, mounting, output, calibration and approval options.

Product overview

A modular electromagnetic flowmeter for water, wastewater and conductive process-liquid applications.

ProcessMaster Water FEW620 combines full-bore flow measurement with integral or remote mounting, Sensor Memory, guided setup, onboard verification and connected diagnostics.

Key standard capabilities

- Bidirectional measurement with configurable measuring range.
- Standard 0.4% flow accuracy; higher-accuracy calibration options.
- Sensor Memory stores calibration and application data securely.
- Onboard fingerprint-based health check and grounding/noise check.
- Four-direction rotatable backlit display with Through-the-Glass setup.
- Active HART/4-20 mA output plus two configurable passive digital outputs.



Measurement principle

A conductive liquid moving through a magnetic field generates a voltage under Faraday's law. Two electrodes detect this voltage, which is proportional to average flow velocity. The transmitter converts it into volumetric-flow, totalizer, analog and digital signals.

FEW620 models

Model	Configuration	Transmitter	Nominal size	Sensor protection
FEW621	Integral mount	Integrated	DN25-DN3000	IP66/IP67
FEW622	Remote sensor	FET622 remote	DN25-DN3000	IP66/IP67/IP68 sensor

Applications

- Potable-water distribution and treatment plants.
- Wastewater, pumping stations and irrigation.
- Raw water, district metering and abstraction.
- Conductive industrial liquids and utility-water lines.

Selection limits

- Minimum conductivity: >20 µS/cm.
- Pipe must remain completely full during measurement.
- Not suitable for gases, steam or non-conductive hydrocarbons.
- Material and pressure selections must match the liquid and flange.

Measuring performance - DN25 to DN600

The configured full-scale flow can be set between $0.02 \times Q_{\max DN}$ and $2 \times Q_{\max DN}$.

Range interpretation: the lower and upper columns are the configurable limits. $Q_{\max DN}$ is the nominal reference flow for each meter size.

DN	Size	Lower range	$Q_{\max DN}$	Upper range
25	1 in	4 L/min	200 L/min	400 L/min
32	1¼ in	8 L/min	400 L/min	800 L/min
40	1½ in	12 L/min	600 L/min	1,200 L/min
50	2 in	1.2 m³/h	60 m³/h	120 m³/h
65	2½ in	2.4 m³/h	120 m³/h	240 m³/h
80	3 in	3.6 m³/h	180 m³/h	360 m³/h
100	4 in	4.8 m³/h	240 m³/h	480 m³/h
125	5 in	8.4 m³/h	420 m³/h	840 m³/h
150	6 in	12 m³/h	600 m³/h	1,200 m³/h
200	8 in	21.6 m³/h	1,080 m³/h	2,160 m³/h
250	10 in	36 m³/h	1,800 m³/h	3,600 m³/h
300	12 in	48 m³/h	2,400 m³/h	4,800 m³/h
350	14 in	66 m³/h	3,300 m³/h	6,600 m³/h
400	16 in	90 m³/h	4,500 m³/h	9,000 m³/h
450	18 in	120 m³/h	6,000 m³/h	12,000 m³/h
500	20 in	132 m³/h	6,600 m³/h	13,200 m³/h
600	24 in	192 m³/h	9,600 m³/h	19,200 m³/h

Accuracy

Standard pulse-output accuracy: $\pm 0.4\%$ of measured value with ± 2 mm/s contribution. Options include 0.4% with ± 1 mm/s, 0.3% with ± 2 mm/s, 0.2% with ± 2 mm/s and MCERTS Class 1.

Dynamic performance

Repeatability: $\leq 0.11\%$ of measured value at $t_{\text{meas}} = 100$ s and $v = 0.5$ -10 m/s. Current-output response to 99% is at least 200, 400 or 500 ms depending on excitation frequency.

For DN700 and above, the reference specifies standard accuracy with a ± 4 mm/s contribution. Option availability is size- and certification-dependent.

Measuring performance - DN700 to DN3000

Large-diameter FEW620 configurable metric flow ranges.

DN	Size	Lower range	QmaxDN	Upper range
700	28 in	264	13,200	26,400
750	30 in	312	15,600	31,200
800	32 in	360	18,000	36,000
900	36 in	480	24,000	48,000
1000	40 in	540	27,000	54,000
1050	42 in	616	30,800	61,600
1100	44 in	690	34,500	69,000
1200	48 in	840	42,000	84,000
1350	54 in	1,020	51,000	102,000
1400	54 in	1,080	54,000	108,000
1500	60 in	1,260	63,000	126,000
1600	66 in	1,440	72,000	144,000
1650	66 in	1,512	75,600	151,200
1800	72 in	1,800	90,000	180,000
2000	80 in	2,280	114,000	228,000
2100	84 in	2,520	126,000	252,000
2200	88 in	2,760	138,000	276,000
2300	92 in	3,000	150,000	300,000
2400	96 in	3,240	162,000	324,000
2600	104 in	3,820	191,000	382,000
2800	112 in	4,440	222,000	444,000
3000	120 in	5,080	254,000	508,000

Sizing item	FEW620 guidance
Units	All flow values in the table above are m ³ /h.
Configuration	The transmitter range can be configured from $0.02 \times Q_{\max DN}$ to $2 \times Q_{\max DN}$.
Large-meter body	DN450-DN3000 uses welded steel sensor housing; meter tube is stainless steel.
Support	Devices larger than DN400 require a sufficiently strong foundation and edge-positioned supports.
Sensor length	ABB standard; 1.0D option is listed for DN700 and above.

Sensor and process specifications

FEW620 full-bore sensor data; final limits depend on selected size, flange, liner and approval.

Functional specification

Parameter	FEW620 specification
Nominal diameter	DN25-DN3000
Measuring medium	Conductive liquids
Minimum conductivity	>20 µS/cm; 20 µS/cm stated for demineralized water
Process temperature	-5 to 80 °C with hard-rubber liner
Ambient at sensor	Steel flange: -10 to 60 °C; stainless flange: -15 to 60 °C
Pressure rating	PN10-PN40; ASME Class 150/300 and other listed standards
Process connection	Flanged connections to EN/DIN, ASME, JIS, AWWA and Australian standards
Flow direction	Bidirectional; forward is factory default
Protection	Integral IP66/67; remote sensor IP66/IP67/IP68

Materials of construction

Component	Standard / option
Liner	Hard rubber
Electrodes	316Ti standard; options 316L, Hastelloy C-22, Hastelloy C-4 and super-austenitic steel
Grounding ring	Stainless steel, optional
Flanges DN25-DN400	Galvanized steel standard; stainless steel option
Flanges DN450-DN3000	Painted steel
Sensor housing DN25-DN400	Painted cast aluminium; coating ≥80 µm, RAL 9002
Sensor housing DN450-DN3000	Painted welded steel; coating ≥80 µm, RAL 9002
Meter tube	Stainless steel
Terminal box / gland	Grey-white plastic terminal box; polyamide gland

Process connections

Connection family	Available FEW620 ratings / standards
EN 1092-1	PN6, PN10, PN16, PN25, PN40
ASME	Class 150 and Class 300; B16.5 and B16.47 variants by size
JIS	5K, 7.5K and 10K
AWWA C207	Classes B, D, E and F
Australian	AS4087 PN16 / PN35; AS2129 Table D / E

Approvals and certificates

Approval / document	Availability
Potable water	WRAS, NSF-61, AS/NZS 4020 and ACS options for qualified size/liner combinations
Calibration	ABB standard, third-party witnessed and ISO 17025 five-point options
Inspection	EN 10204 3.1 option
Verification	Fingerprint-based verification capability listed as enabled
Compliance	CE / UKCA configurations and further approvals on request

Potable-water approvals in the reference are listed for hard-rubber FEW6XX configurations, generally DN40-DN2400. Confirm exact size, liner and factory eligibility before ordering.

Transmitter, outputs and diagnostics

FET622 functionality applies to remote FEW622 systems; equivalent transmitter functions are integrated in FEW621.

Power and outputs

Item	Specification
AC supply	100-240 V AC (-15%/+10%), 47-64 Hz, <20 VA
DC supply	24-48 V DC (-10%/+10%), ripple <5%, <10 W
Current output	Active 4-20 mA; operating range 3.5-22.6 mA; max load 600 Ω
Current repeatability	$\pm 0.1\%$ or better
Digital output 1	Passive; pulse, frequency or switch output
Digital output 2	Passive; pulse or switch output
Digital ratings	Maximum 30 V DC, 25 mA; frequency to 10.5 kHz
Pulse width	0.1-2000 ms

Display and setup

- High-contrast graphical LCD.
- Current and totalized flow display.
- Two configurable operator pages.
- Four-button menu and Easy Set-up.
- Configuration through the front glass with housing closed.

Communication

Interface	Specification
HART	Version 7.9; 1200 baud; active current loop
HART addressing	Address 0-63; multidrop supports up to 15 devices
Modbus RTU	Optional RS485 module with two terminal sets
Modbus address	1-247
Modbus baud	2,400 to 115,200 baud; factory default 9,600
Typical Modbus response	<100 ms; configurable response delay 0-200 ms
Remote signal cable	50 m without preamplifier; 200 m maximum with preamplifier

Diagnostics and verification

- Continuous sensor, transmitter and process monitoring.
- Plain-text fault diagnostics and prioritized alarms.
- Fingerprint-based onboard health check.
- Noise and grounding check.
- Output simulation, service-interval monitoring and empty-pipe detection.

Environmental and mounting data

Transmitter / environmental item	Specification
Ambient temperature	-20 to 60 °C
Storage temperature	-40 to 70 °C
Transmitter enclosure	Integral or remote IP66/IP67
Housing	Plastic, RAL 9002 light grey; polyamide cable gland
Vibration	0.15 mm max deflection at 10-58 Hz; 2 g max acceleration at 58-150 Hz
Remote FET622 envelope	Approx. 133 mm wide × 165 mm high × 93 mm deep
Remote mounting	Approx. 151 mm mounting spacing; Ø6.4 mm fixing holes

Empty-pipe detection requires liquid conductivity $\geq 20 \mu\text{S/cm}$ and no preamplifier.

Installation and commissioning guidance

Correct full-pipe installation, grounding and straight-run practice are essential for stable electromagnetic measurement.

Mechanical installation

- Match the flow-direction marking; the meter measures both directions.
- Install without torsion, bending or unacceptable pipe forces.
- Use compatible gaskets and keep them out of the flow cross-section.
- Keep the electrode axis horizontal where possible, or within 45° of horizontal.
- For horizontal installation, keep the tube completely full; use a slight incline for degassing.
- For abrasive liquids, prefer vertical installation with upward flow.
- Support meters larger than DN400 on a strong foundation at the housing edges.

Location and straight runs

- Typical straight run: 3 × DN upstream and 2 × DN downstream.
- Reference test conditions: 10 × DN upstream and 5 × DN downstream.
- Do not install fittings, manifolds or valves immediately upstream.
- Avoid free discharge at a pipe high point and prevent the measuring tube from emptying.
- Keep about 1 m from powerful electromagnetic sources and 100 mm from steel mounting parts.
- Use flexible damping beyond the supported flowmeter section where strong vibration exists.
- Provide sun protection and install remote transmitters in a low-vibration location.

Grounding

Grounding situation	Required practice
General	Connect the sensor to ground potential equal to the measuring-medium potential.
Metal pipe	Bond the sensor ground terminal to the pipe/flange grounding point.
Plastic or insulated pipe	Use grounding rings to establish measuring-medium potential.
Stray potentials	A grounding ring is recommended at both ends of the sensor.

Connection overview

Terminal	Function
31/32	Active HART + 4-20 mA output
41/42	Passive digital output 1: pulse, frequency or switch
51/52	Passive digital output 2: pulse or switch
L/+; N/-; G	AC or DC supply and protective earth
A/B; A1/B1	Optional Modbus terminal sets

Commissioning check

Confirm pipe fullness, flow direction, grounding, supply voltage, selected range, output scaling, damping, low-flow cut-off, totalizer units and alarm settings. Run the built-in health and grounding/noise checks after commissioning.

Ordering and selection checklist

Complete these application details before requesting a quotation or final ABB order code.

Ordering field	Required customer selection
Model	FEW621 integral / FEW622 remote with FET622 transmitter
Meter size	DN25-DN3000; confirm minimum, normal and maximum flow
Process liquid	Liquid identity, conductivity, solids, temperature and chemical compatibility
Connection	Flange standard, pressure class, face-to-face length and gasket requirement
Wetted materials	Hard-rubber liner; electrode and grounding-ring selection
Calibration	Standard 0.4% or optional 0.4%/1 mm/s, 0.3%, 0.2% or MCERTS Class 1
Power	100-240 V AC or 24-48 V DC
Outputs	HART/4-20 mA + two digital outputs; optional Modbus RTU
Installation	Integral/remote, cable length, preamplifier, IP requirement and transmitter orientation
Certificates	Calibration, ISO 17025, EN 10204 3.1, potable-water and compliance requirements
Options	Customer configuration, test points, sensor length, documentation language and verification

Common accessories

Accessory	ABB order code / availability
FET622 weathershield kit	3KXA877210L0103
FET622 pipe-mount kit	3KXA877210L0102
FET622 panel-mount kit	3KXA877210L0101
USB service cable	3KXF065601U0100 / 3KXF065669U0100 / combined pack 3KXF065690U0100
Signal cable	5, 10, 15, 20, 25, 30, 35, 40, 50, 80, 100, 150 and 200 m options
On-site terminal-box potting kit	0218499

Final selection check

Before ordering, confirm the selected DN is inside the desired operating velocity range, the pipeline remains full, the liquid meets conductivity requirements, and every requested approval is available for the selected size and material combination.

Important: This is a condensed selection datasheet prepared from ABB DS/FEW620_FER620 EN Rev. C. It does not replace the current manufacturer datasheet, certified dimensional drawing, approval certificate, calibration certificate or final order code.